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The question of whether, in fact, class sizes in American colleges are increasing and the attitudes toward large versus small classes are discussed in this article. Faculty-student ratios in State colleges in 1957–58 are compared to those in 1960–61. The fact that these ratios tend to shift toward a median level is examined.

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Class Sizes and Faculty-Student Ratios in American Colleges

HOWARD E. BOSLEY

THE ARGUMENT over desirable sizes for college classes is neither new nor limited to a small number of reports. It is a subject that has been well represented in professional literature throughout the current century and on which emphasis shows no sign of abating. In 1936 H. Leigh Baker said, "Class size influence on teaching and learning has intrigued administrators and research investigators for the last forty years," and at about the same time another writer discovered "that 205 books, monographs, and articles were devoted to the problem during the period 1900–1932." In this connection, it is interesting to find that a recently issued 1958 study conducted by a state university shows in its bibliography sixty significant publications on this subject since 1932.

It is likely that, when investigations of this nature are considered by numerical count, those favoring large classes would predominate. For this reason the lay reader and the novitiate, and even the professional who does not take time for careful analysis, may feel that they have discovered a trend. However, treatment of this subject which is more than superficial reveals doubts in administrative minds as to whether all such studies are unequivocally valid and convincing.

Some exploration into the feasibility of large instructional groups seems justified during the current decade, as enrollments in institutions of higher learning mount, with the possibility of almost a 100 percent increase by 1970. Those who administer institutions of higher learning and those who teach in colleges and universities are, without doubt, aware of the experiments dealing with effects of class size on the efficiency of the learning process. Some analysis is in order to determine whether practices in administering American colleges and universities are reflecting an emerging attitude favoring or opposing increases in class size. To the extent that American higher education is able to control its own destiny, any changes in administrative philosophy can be expected to reveal themselves in observable administrative practices and policies.

Are college classes increasing in size?

To a very considerable degree, a statistical approach toward the answer to this question could be thought of as reflecting the point of view of a sizable jury of presidents, deans, department heads, and faculty members who are currently at work in American higher education. To discover whether the tide is running for or against large instructional groups, some typical early studies will be compared with those of more recent date.

Hudelson's [1] survey in 1927–28 reported an average class size of 25.2 in 28 state universities. Twenty-nine years later Green [2] reported a median class size

[1] Earl Hudelson, "Class Size Standards at the College Level," *North Central Association Quarterly*, March 1932, pp. 371–81.

[2] William E. Green, "A Study in Class Sizes in Major State Universities," in *Abstracts and Bibliography of Studies of Class Size* (Mimeographed; University Park, Pa.: Division of Academic Research and Services, Pennsylvania State University, 1958), pp. 33–36.

of 21.5 students in 25 state universities. Hudelson further reported a 1927–28 average class of 26 students in 64 degree-granting state teachers colleges in 27 states. In a 1949 survey involving 1,351 faculty members in 147 state colleges and universities, Kelly[3] reported an average class of 24 students. A 1955 report[4] of class sizes in freshman English showed that 34 percent of the classes in 127 colleges fell in the 25–29 group, with 37 percent of the sections running under 25 students, and 29 percent above 29. Freshman English class size in only nine colleges exceeded 34 students.

Another significant indication that classes in American institutions of higher learning are not increasing materially in size is indicated by Millett,[5] who reports a very slight downward trend in the number of resident students per full-time faculty equivalent between 1940 and 1950 in publicly supported institutions. This survey showed a 1950 ratio of 1:18 in public liberal arts colleges against a 1:19 ratio in 1940, and a 1950 ratio of 1:18 in public junior colleges against a 1:22 ratio in 1940. Ratios in state universities remained unchanged (1:11) during the decade, as did ratios in publicly supported professional schools (1:13).

Privately supported institutions showed a distinctly more favorable faculty-student ratio than public colleges and universities, but a slight upward trend in the number of resident students per full-time faculty member occurred in private colleges during the decade. Millett's figures are based on U.S. Office of Education data and involve information collected from a majority of the nation's colleges and universities.

There is some reason for believing that Millett's data show a slight decrease in faculty-student ratios over the ten-year period in those institutions in which the ratio is heavy and a slight increase in those institutions in which the ratio is most favorable. This tendency for colleges to shift over a short period of time from either extreme of a faculty-student ratio distribution to a position near the median is highly significant. A similar shift will be noted later.

The 1956–57 study of Green, cited earlier, showed a median faculty-student ratio of 1:12.6 in 25 major state universities, with quartile points at 8.35 and 15.9.

As is true of the average class-size figures, surveys of faculty-student ratios have not shown much influence by the heavy clamor expressed in some of the professional literature extolling the virtues of large instructional groups.

Some dissenting voices

Careful reading of the literature on this subject does not reveal a unanimous voice in favor of large classes. Some reasons for caution seem to be underscored by a Fordham University experiment involving the subjects of economics, political science, and sociology, which concludes that such a study ". . . does not demonstrate irrefutably that increased class size is the definitive solution for the 'bulge.'"[6] The authors point out the fact that experiments usually have been restricted to the "middle range" of students, have dealt primarily with basic courses in the social science curriculum taught by dynamic teachers, and finally, that the experiments were limited to a single trial run. It is unfortunate that

[3] Frederick J. Kelly, "A Survey of College Teacher Personnel," *Higher Education,* April 1, 1949, pp. 171–72.

[4] Marvin Laser, "Teaching Load and Class Size in English Composition," *Junior College Journal,* January 1955, pp. 255–60.

[5] John D. Millett, *Financing Higher Education in the United States,* Staff Report of the Commission on Financing Higher Education (New York: Columbia University Press, 1952), p. 130.

[6] Joseph R. Cammarosano and Frank A. Santopolo, "Teaching Efficiency and Class Size," *School and Society,* Sept. 27, 1958, pp. 338–41.

limited conditions of this type have usually characterized class-size studies.

Anderson [7] reports what seems to be an unusually well-controlled 1950 study in which student intelligence and pretest knowledge were held constant through the use of variance and covariance techniques. This investigation disclosed a 22 percent accomplishment differential in favor of classes taught by teachers whose total daily student load placed them in the lightest student load quartile, as compared to the learning outcomes in classes taught by teachers whose student load placed them in the heaviest fourth of the distribution.

Two decades earlier, O'Shaughnessy [8] reported a study that showed a positive correlation between the size of classes and the percentage of students failing the courses. These correlations were small, though decidedly positive, for courses of lecture type and were more pronounced for courses which required the use of laboratories. The study involved 234 lectures and 90 laboratory courses.

One investigation clearly indicated superior science learnings under conditions in which teachers contacted fewer than 77 students each day as compared with teachers whose daily student load was 128 or more students.

In 1949, a Queens College associate professor of English voiced the view that studies on class size are inconclusive but "tend to shift the burden of proof on those who insist on small classes." [9]

Several writers have seemed sensitive to the possibility that a movement toward large classes would result in excessive student loads for college teachers, which would seriously impair instructional efficiency. Suggestions have been made that if the college teacher's total student assignment becomes heavy, consideration should be given to the provision of non-teaching personnel, teaching fellows, and junior instructors, who should take over the testing and "bookkeeping" details which are normally a part of the college teacher's job. Several thoughtful comments have been made by competent evaluators to the effect that moderately large classes do less harm to the college teacher than the excessive total student load that is the normal accompaniment of large classes. Large classes usually result in fewer tests, fewer research assignments to students, less individual stimulation and guidance, and overworked teachers whose professional growth potential is seriously impaired.

Faculty-student ratios in state colleges 1957–58 and 1960–61

United States Office of Education publications concerning full-time faculty and students for the academic year 1957–58 have provided data from 165 state colleges in 39 states. Because of difficulties necessarily involved in equating part-time students on a full-time equivalency basis, those schools which had reported an enrollment of more than 5 percent part-time students were excluded. Because too high a proportion of graduate students in a state college might distort a computed ratio and render comparisons invalid for undergraduate schools, data from state colleges reporting more than 10 percent of college enrollment at the graduate level were not included. The 1957–58 data were supplemented by comparable figures for 1960–61. Frequency distributions for the latter year were available from federal sources and national organizations in Washington, D.C., and participating colleges were held to

[7] Kenneth E. Anderson, "Relationship between Teacher Load and Student Achievement," *School Science and Mathematics*, June 1950, pp. 468–70.

[8] Louis O'Shaughnessy, "The Size of College Classes and the Percentage of Failures," *School and Society*, Sept. 14, 1929, p. 374.

[9] John Siemon Diekhoff, "Staffing the Colleges," *Journal of Higher Education*, December 1949, pp. 445–56.

the same qualifications that applied to 1957–58 data.

The fact should be mentioned that this study defined "state colleges" as those institutions that are devoted in considerable part to the preparation of teachers. A strong majority of these are now listed as state colleges, though several still retain the teachers college name, and a few have recently been named state universities. It should be said that all the institutions from which data are used prepare teachers, and almost all of them offer curricula in the liberal arts and sciences, along with other professional and preprofessional work. It is this type of institution with which the current study attempts to deal, rather than with the major state universities.

The plan used in selecting the state colleges for inclusion in the survey, as described above, yielded 1957–58 data from 165 institutions distributed over 39 states. Enrollment and faculty data for 1960–61 were collected from 151 institutions in 35 states. The average enrollment in the institutions studied was 1,631 students. Only a half-dozen colleges enrolled more than 5,000 students, and exactly 20 enrolled fewer than 500 students during the 1957–58 academic year. For the most part, they are growing institutions. A 1960–61 enrollment follow-up showed an average enrollment gain over 1959–60 of 8.8 percent. Only 15 colleges showed 1960 enrollments that had decreased slightly below those of 1959, and 11 reported increases of 20 percent or more.

Range of established ratios

The distributions of faculty-student ratios which existed in 1957–58 in 165 state colleges and in 1960–61 in 151 state colleges are shown in Table 1.

Almost without exception, the institutions from which data were used in the 1957–58 study appear again in the 1960–61 survey. Fourteen of the original 165 colleges no longer met the low percentage requirements set up for part-time students and faculty and were necessarily eliminated from the 1960–61 distribution.

TABLE 1: DISTRIBUTION OF FACULTY-STUDENT RATIOS IN STATE COLLEGES, 1957–58 AND 1960–61

FACULTY-STUDENT RATIO	NUMBER OF INSTITUTIONS	
	1957–58	1960–61
Above 1:25	10	.....
1:24–25	1	2
1:22–23	7	8
1:20–21	21	21
1:18–19	23	29
1:16–17	31	31
1:14–15	34	46
1:12–13	24	14
1:10–11	11	.....
1:8–9	3	.....
Total	165	151
Quartile 3	*1:19.7*	*1:19.1*
Median	*1:16.7*	*1:16.6*
Quartile 1	*1:14.6*	*1:14.7*

Generally speaking, extremes of high or low ratios showed wide geographical distribution, except that four of the ten schools in the heaviest ratio group occurred in two states. Several states showed a consistent relatively heavy or a relatively light ratio, thus apparently reflecting either state policy or financial conditions. Nevertheless, considerable variations were observed among institutions within many of the states. Where wide intrastate variations existed, usually these seemed to result from one or two institutions showing an extremely heavy faculty-student ratio. In a smaller number of cases, a single institution showed an extremely favorable ratio that was quite out of line with the observable state pattern. These intrastate variations could have resulted from rapid enrollment increases in one or two of the state colleges, or from an occasional instance of unattained enrollment expectancy in some institutions.

In the distribution shown above, it will be observed that the median faculty-student ratio in general is consistent with

those of other decades when all types of institutions are considered. It is apparent, however, that in the upper reaches of the distribution several institutions are operating under relatively heavy ratios.

Ratios tend to shift toward a median level

When data for 1957–58 and 1960–61 are compared, two very significant facts are obvious. In the first place, it is evident that by 1960–61 the range of the ratios had been reduced. Thus a distinct cluster is noted in the middle ranges of the 1960–61 data, and far fewer colleges appear at the upper and lower fringes than in 1957–58.

A still more interesting and possibly far more significant fact emerged when 1960–61 data were examined for schools which had been in the upper and lower quartiles in the 1957–58 study. It was found that 31 of the 41 institutions which ranked in the upper quartile in 1957–58 had made significant reductions in their faculty-student ratios by 1960. In fact, a respectable number of these schools that were most heavily burdened in 1957–58 stood close to the median in 1960–61. Likewise, 34 schools in the lowest quartile in the earlier survey had increased their ratios upward toward the median.

The fact, therefore, seems evident that some institutions which had been inadequately staffed in 1957–58, despite larger enrollments by 1960, had added sufficient staff to reduce significantly their faculty-student ratios.

This observable and consistent movement of the colleges away from the extremes in the upper and lower quartiles seems to indicate clearly the temporary nature attached to very high or very low ratios by those who control the policies in public institutions of higher learning. In the one extreme, faculties are burdened with too many students, and institutional excellence may deteriorate. It is likewise true that ratios which fall in the lower quartile seem indefensible in the light of the expense involved, especially during an era in which students in increasing numbers are clamoring for admission to the colleges.

No significant change seems to have occurred in the median and lower quartile points during the three-year period, when individual colleges were ranked. Likewise, no significant change has occurred in the state medians of 1957 (16.5) and 1960 (16.4).

For statistical treatment of data such as those used in this section, the author believes the median is a more reliable measure of central tendency than the mean. However, it is interesting to note that from 1960 enrollment and faculty data supplied by 238 state colleges and state teachers colleges, the average number of students per faculty member was found to be 16.7, when full-time equivalency figures were used.

Conclusions

1. A half-century of investigations concerning the merits and demerits of larger classes has thus far failed to exert a significant observable influence on faculty-student ratios in a strong sampling of American state colleges.

2. A majority of the small-class versus large-class investigations has not been overwhelmingly conclusive. Too often the class-size differentials used in the experiments have been too small to show any real significance in the size variant. In some experiments, classes of 25 students have been compared with classes of 40 or 50. Often the large classes have been taught by strong and thoroughly experienced teachers whose effectiveness with large classes probably cannot be matched by any large segment of the faculty or, indeed, by the enthusiastic professor himself if, instead of teaching a single large experimental class, he had been required to handle nothing but large classes or a majority of large classes. Most experiments have used subject-

fields in which the lecture technique is the major instructional approach.

3. Total student load, or the number of students taught each day or week by a single faculty member, constitutes a more significant factor than either faculty-student ratios or average class sizes.

4. The personal characteristics of the instructor, the type of subject matter, the maturity level, intelligence, and drive of the learners are factors which indubitably influence the effectiveness of large-group instruction.

5. In American higher education, some experimentation is under way that may develop new techniques for rendering instruction more effective in larger classes. Some of these involve the use of specially designed lecture rooms and closed-circuit television systems, the use of nonteaching personnel to assume the clerical responsibilities involved in classroom instruction, and the employment of teaching fellows and/or junior instructors to serve as assistants to college and university teachers. Obviously, these expedients are not equally applicable to all instructional fields, nor are all of them equally practicable for all types of colleges and universities in the land. With these limitations in mind, it would seem that college and university administrators are proceeding with justifiable caution in not allowing themselves to be forced by local and regional pressures toward wholesale expansion of class sizes and faculty-student ratios. Unwarranted increases in the number of students assigned to the daily or weekly contact load of college and university instructors could seriously impair the quality of instruction and the professional growth potential of faculties.

It would seem that innovations in class instructional procedures that permit effective instruction of large groups should be implemented. With equal certainty, however, we can be assured that rapid and reckless increases in class sizes and faculty loads would do much to lower the quality of academic standards now extant and in other ways could result in irreparable damage to the nation's intellectual potential in the years ahead.

An Orientation Program for Beginning Teachers

E. C. HARRISON

THE EMERGENCE of education as a critical factor in the continued growth of the American economy and in the nation's survival of current international involvements has placed unprecedented demands on educational institutions at all levels. These demands are seen in the desire of more and more students to seek a college education and in the growing needs of society for specialized talents. Prompted by these developments, institutions of higher learning are directing their energies toward the improvement of instruction, which, among other things, involves reorganizing curricula, obtaining adequate facilities, and maintaining a competent faculty. Of growing concern to most colleges today is the securing of a faculty of quality.

Recently it has become apparent that a significant proportion of recruits to the faculty of Southern University will consist of persons without teaching experience. This fact takes on additional significance when it is realized that the preparation of these recruits, which was centered on the acquisition of knowledge in a narrow subject-matter field, has not equipped them for the complex task of college teaching. For as observed by Justman:

> There is general agreement that the typical graduate program pursued by prospective teachers falls short of the mark: commendable as a means of training in specialized scholarship and contributing also toward broader discipline, it does not offer direct preparation for the fundamental professional responsibility—teaching. More serious than the omission of training in the technical aspects of instruction is a failure to impart broader concepts of education, human development, the learning process, and the teacher's mission.[1]

Actually, it is expecting too much to assume that a young teacher who has just completed a prescribed graduate program which, for the most part, had been oriented to producing scholars, can perform successfully the role of a college teacher without some help.

In sharing Justman's thought, Paul Klapper stated:

> The novice in every profession is assured of well-intentioned if not helpful supervision and guidance by experienced colleagues of proved competence. This responsibility toward the beginner is generally recognized as a professional obligation, and provision is made for it. But again in college teaching we usually find an impressive exception. The young university graduate is entrusted with the teaching of college classes, often with no more assistance than is afforded by a catalogue description or a syllabus of the course he is to teach.[2]

Increasingly, the inadequate preparation of the beginning teacher is receiving the attention of professional educational organizations and universities. It will be some time, however, before these promising efforts will make a major contribution to resolving the problem. This situation suggests that the employing institutions need to develop programs of orientation for beginning teachers. In supporting the need for such programs, O. Meredith

[1] Joseph Justman and Walter H. Mais, *College Teaching: Its Practices and Its Potential* (New York: Harper & Bros., 1956), p. 52.

[2] Klapper, "Problems in College Teaching," in *The Preparation of College Teachers*, eds. Theodore C. Blegen and Russell M. Cooper (Washington: American Council on Education, 1950), pp. 44–45.